CHAPTER III
RESEARCH METHOD

A. Research Method and Design

1. Research Method

The researcher was focus on students' writing descriptive text because in the situation students' have difficulties in writing descriptive. Based on the problem in this research, the researcher used a quantitative method.

Quantitative research is research related to numerical data. According to Creswell (2012) experimental research is "a certain treatment in experimental research that can affect the results. (Sugiyono, 2018) A method for determining the effect of independent variables on the dependent treatment controlled by researchers is quantitative research. The method well controlled so there are no other variables (besides treatment) that can affect the dependent variable (Misbahuddin & Hasan, 2013) experimental methods in research can change after (there is special training) are provided on the required variables needed.

Based on the statements above, the researcher concludes, that the experimental method is the method used to study cause and effect in research, and compare research with the experimental and control groups.

2. Research Design

In conducting this research, the researcher used a quasi-experimental (quantitative) design. Research design that includes assignments, but not random assignments of participants to groups, because experiments cannot artificially create groups for experiments are quasi-experimental design (Creswell, 2012). From the understanding above, can be concluded that the researchers do not have a chance for random assignments of students to special groups under different conditions. In this research, researcher used two classes consist of one class as the experimental class and one class as the control class. In this study, researchers went to know the influence of using a word web graphic organizers on students' writing ability in descriptive text.

The design of experiment and control class researcher used a nonequivalent control group design (Sugiyono, 2018), as followed :

Table 3.1 Research Design

O_1	X	O_2
O_1	-	O_2

Note :

O_1 : Pretest for the experimental group

O_1 : Pretest for the control group.

O_2 : Postest for the experimental group

O_2 : Postest for the control group.

X : Treatment of sequence graphic organizers in the experimental group.

In this research, students have given a pre-test to find out their writing ability in the descriptive text before treatment and a post-test after treatment with a word web graphic organizer. Pre-test and post-test was conducted in the control and experiment class

B. Research Variable

According to Kerlinger (Sugiyono, 2013) states that variables are traits or values that must be studied by researchers. From this explanation, the researcher concludes that the variable is the nature of an object and activity that has certain variations that have been determined by the researcher.

In this research, researchers used Word Web Graphic Organizer as a technique in learning to write descriptive text consisting of two variables. (Sugiyono, 2011) There are several types of variables in the study, in this study, researchers used two variables that contributed:

1. The independent variable

According to (Sugiyono, 2011) An Independent variable is a variable that can influence or is the cause of changes in selected variables. The independent variable in this research is the word web, graphic organizer. Cluster/word web is a graphic organizer that teachers use to help students sort out their thoughts in learning before they start writing essays, research papers, or other projects. Based on these explanations, it can be concluded that the word web is a tecnique that can help students to describe or group their ideas based on a topic before they start writing.

2. The dependent variable

Sugiyono, (2011),states that the dependent variable is the variable that will be observed and measured to determine the effect of independent variables.

The dependent variable in this research is descriptive text. Writing ability is the skill of a writer to communicate information to readers or groups of readers. This means that writing ability is the ability that writers need to provide information and coordinate with readers.

Students' descriptive text writing ability is the ability to describe an object, especially people, places and things in detail with good mastery of the five aspects of writing such as content, organization, vocabulary, language and mechanics.

C. Research Population, Technique Sampling, and Sample

1. Research Population

Sugiyono, (2013),stated that population is the generalization region consisting of: objects/ subjects that have certain qualities and characteristics defined by the researchers to learn and then drawn conclusions. Based on this explanation, it can be concluded that a population is an object or subject that have certain characteristics that can be used as a population in research. The population in this research is the students at tenth grade of SMK Muhammadiyah 3 Metro in Academic Year of 2020/2021.

Table 3.2 Research Population

No	Class	Number of Students'
1	TKR	30
2	TAV	11
3	TKJ 1	33
4	TKJ 2	26
5	KEP 1	35
6	KEP 2	35
7	KEP 3	34
8	FAR 1	30
9	FAR 2	35
10	FAR 3	30
11	FAR 4	32
12	TLM	22
13	PHT	8
14	TBG	18

Total Number of Students'	379

Source: Based on teacher's data of First Semester at SMK Muhammadiyah 3 Metro

Based on the table, the population of this research is tenth grade of SMK Muhammadiyah 3 Metro in Academic Year 2020/2021. There are fourteen classes of this semester. Therefore, the total of the population in this research is 379 students.

2. Sampling Technique

In this research the researchers getting samples from the population, the writer used cluster random sampling. Cluster random sampling occurs when the population is already divided into natural, preexisting groups. James B. Schreiber (Pratama, 2017) A cluster can be a state, district, school, classroom, metropolitan statistical area, city zone area, neighborhood block, street, etc. It means cluster sampling is a technique used in sampling if the population is homogeneous.

The steps in determining the experimental and control class are as follows:

a. First, the researcher provides fourteen pieces of paper. The researcher wrote the paper contains the name of each class including; TKR, TAV, TKJ1, TKJ2, KEP1, KEP2, KEP3, FAR1, FAR2, FAR3, FAR4, TLM, PHT, TBG.
b. Then, the papers are rolled and put into the bottle.
c. After that, the writer shakes the bottle and then pour it down and then the writer takes two pieces of the rolled paper.
d. Finally, the first paper is class X KEP2 as an experimental class and the second paper is class X KEP1 as a control class.

3. Research Sample

The sample is part of the number and characteristics possessed by the population (Sugiyono, 2018). According to Suharsimi Arikunto in (Ridwan, 2016) the sample was part of the population. From this statement above it can be concluded that the sample is part of the population that have characteristics that was be examined by the researcher. The researcher chose two classes, they are one class as the experimental class and one class as the control class.

D. Research Instrument

1. Kinds of Research Instrument

In this point, Research isntrument is equipment that can be used in the research conducted to get the final goal of the research. According to Suharsimi Arikunto (Ridwan, 2016) data collection instruments are the tools chosen and used by researchers in collecting activities so that the activities become systematic and made easy. From the explanation above the researcher concludes that the data collection instrument is a tool that helps the researcher in collecting data.

In this research, the researchers were used as a research instrument that is a writing test. (Ridwan, 2016) tests are questions or exercises used to measure the skills, knowledge, intelligence, abilities, or skills needed by individuals or groups. In this research, researchers made two instruments, they are pre-test and post-test. The instrument of pre-test and post-test is tested to compose a descriptive text. The researcher will give some topics that must be chosen by students. The topics of descriptive text for the pre-test and post-test are presented in the table above:

Table 3.3 Pre-test and Post-test instrument

Instrument	Objective	Topic
Pre-test	Students are expected to be able to write simple descriptive texts communicatively, and appropriately.	1. Make a simple descriptive text about animals. 2. Make a simple descriptive text about Mother. 3. Make a simple descriptive text about an idol.
Post-test		1. Make a simple descriptive text about your self. 2. Make a simple descriptive text about friends. 3. Make a simple descriptive text about fruits.

E. Validity and Reliability

The validity and reliability of instrument will be explained by the researcher, validity is supposed to measure that instrument of the test that must be valid.

Besides, test realiability refers to degree to which a test is consistent and stable in measuring what is intended measure.

1. Validity

The validity is to measure the extent to wich the instrument measures what in the purports to measure. According to (Pratama, 2017) validity is a matter of relevance. This means that a good form of the test must have good validity, so that the test can be measured based on the written aspects that will be measured. The validity of the test can be devided into three main groups namely : (1) Content Validity, (2) Construct Validity and (3) Criterion Validity (Sugiyono, 2013).

Instrument shaped test, content validity can be done by the comparing the contents of the instrument with the subject matter than has been though. In the content alidity the material given is suitable with the curriculum used. Furthermore in this research the researcher reporst that the test is valid because they are based on the school curriculum. Content validity express how far item in the test express metter which present in curriculum, according to (Sugiyono, 2011) defines content validityix the exstension which a test measures are preventative sample of subject matter of the content. Content validity accurs when the xperiment provides adequate coverage of the subject being studied. To maintain the validity of the data, in this research used content validity, this includes measuring the right things as wll as having an adequate sample. Sample should be both large enough and be taken for appropriate large groups, the test item is given may really measure or test the students' writing ability in descriptive text.

The formula of validity (Sugiyono, 2013):

$$r_{xy} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{\left(N\sum X^2 - (\sum X)^2\right)\left(N\sum Y^2 - (\sum Y)^2\right)}}$$

Where :

r_{xy} = coefficient correlation between x and y or realibility instrument

N = The total students in test

ΣX = the sum of score of the test

ΣY = the sum total of score of the test

ΣX^2 = the sum of deviation X

ΣY^2 = the sum of deviation Y

2. Reliability

Reliability refers to extention to which the test is consistent in it is score and give an indication how to accurate the test score is. According to (Suharsimi, 2010) the reliability of the test is an instrument can be believed to be used as instrument for collecting data becaude it has been good. Based on explanation above, the measurement whether the test has good realibility or not. In this research uses product moment formula which adopted from (Suharsimi, 2010) and the result of the test will be conducted to look the reliability of each items of the given tests by using product moment formula which is analyzed through Spearman Brown formulas' as follow :

$$r_{xy} = \frac{\Sigma_{xy}}{\sqrt{(\Sigma x^2)(\Sigma y^2)}}$$

Notes :

r_{xy} : Correlation between x dan y

Σ_{xy} : Total x time y

x^2 : Deviasi x

y^2 : Deviasi y

Based on the explanation above, the researcher concludes that reliability refers to the extention to which the test is consistent in it is score and it gives an indication how accurate the test score is. In this research, to have reliability of the test, the researcher used spearmen brown formulas.

F. Data Collecting Technique

In this research, the reasearcher was used a writing test to collect the data. The test consists of pre-test, post-test. The test was used to know the students' ability in writing descriptive text. The teacher asks students to make a descriptive text.(Ridwan, 2016) Data collection methods are techniques or ways that can be used by researchers to collect data. Data collection techniques in this research are:

1. Pre-test

A pre-test is conducted as the preliminary research to identify the students' real competence and problems in writing descriptive text. The researcher gave

pre-test to the students in the control class and the experimental class to measure their descriptive text writing ability before treatment. The researcher took the score to get the first information. The pretest was administrated on, 26th August 2020 at 08.00 - 11.00 a.m. The scoring is based on the appropriate steps; content, organization, vocabulary language, and mechanic.

2. Treatment

After conducting a pre-test, the researcher gave the treatment to the students. Treatment aims to develop the students' writing ability. The treatment was conducted by the researcher in class. The following is a description of the steps of using the Word Web Graphic Organizer.

a. The researcher prepares teaching materials from books or the internet
b. The researcher prepares to teach material using software..
c. Researcher delivering material using Graphic Organizer.
d. Directing students' in learning using Graphic Organizer
e. Directing students' to conclude the learning process

3. Post-test

Post-test has been given after the researcher giving the treatment in an experimental class. The aim is to see how the students improve in writing descriptive text after giving treatment. The researcher gave a sequence of steps is like a pre-test. The score of the post-test is based on criteria on the writing test rubric, content, organization, vocabulary language, and mechanic.

G. Data Analysis Technique

After the researcher getting the students' scores, the researcher analyzed the result of the data after the students' had finished doing their pretest and posttest by using a test of normality and test of homogeneity. In this research, scoring guidance by Arthur Hughes (Mustaqiyah, 2016a) was used to be able to give, analyze, and prove the reliability of the students' score. They are grammar, vocabulary, content, organization, and mechanic.

1. Normality Test

The normality test is used to measure whether data in the experimental class and the control class are normally distributed or not ,Sugiyono, (2011). One of the test assumption of the statistic compulation is that the data must fufill the qualification of normal distribution. Therefore, analyzing the normality of distribution the students' score is crucial. Data normality tests can be done in various ways: 1) Normal Chance Paper Test 2) Liliefors Test And 3) Chi-Square Test (Ridwan 2016). Data normality test is used to determine whether the data distribution is normal or not.

To find the distribution of data in this research, researchers used the normality test with the Chi Quadrate Test formula (Sugiyono, 2013) follow:

a. The hypothesis formula

Ho: sample comes from the population that has a normal distribution.

H_1:sample did not come from the population that has not a normal distribution.

b. Statistic formula :

$$x^2_{count} = \sum_{i=1}^{k} \frac{(f_o - f_h)^2}{f_h}$$

Note :

x^2 : chi-quadrate

f_o : frequency observes

f_h : frequency expectation

k : interval class

Distribution normality with test criteria: if $x_{count} \geq x_{table}$ so the data is not normal distribution and another way if $x_{count} \leq x_{table}$ so the data is a normal distribution.

2. Homogeneity test

The researcher uses homogeneity test to know the instrument homogeneous or not. Homogenity test is a measurement used to determine kind of data. This kind of test intended to test whether the variance of the data in the experiment class and in control class are equal or not. According to (Ahmad, 2010) if the sample come from population which normal distribution. Futher is done homogeneity test with steps, as follow (Ridwan, 2016) :

$$F_{hitung} = \frac{V_b}{V_k}$$

Note :

V_b : bigger variance

V_k : smaller variance

The hypotheses in homogeneity test are:

Ho: homogeneity variance = $\sigma_1^2 = \sigma_2^2$

Ha: non homogeneity variance = $\sigma_1^2 \neq \sigma_2^2$

In this case, the criteria for the homogeneity test were:

Ha is accepted if f-observed>f-critical, or (f- observed > f- critical).

Ho is accepted if f-observed≤f- critical, or (f- observed ≤ f- critical).

3. Hypothesis test

Hypothesis is an assumption about a population parameter. This assumption can be true or not. It is method of making stastical decisions using experimental data, the best way to determine whether a stastical hypothesis is true would be examine the entire population. Sample data are not consistent with the statistical hypothesis, the hypothesis is rejected. Because the test used to know whether the hypothesis that is proposed can be accepted or reject. In this research, the researcher used the quantitative analysis after giving the test to know whether there is a significant influence of the used Sequence Graphic Organizer toward students' writing ability in descriptive text or not. Researcher using a t-test to analyze the data.

The researcher use the following t-test formula as follows :

$$t_{-test} = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\frac{S_1^2}{N_1} + \frac{S_2^2}{N_2}}}$$

Notes:

$\overline{X}_1$ = the means of the experiment class

$\overline{X}_2$ = the means of the control class

S = the standard devitiation

N_1 = the number of students' in the experimental class

N_2 = the number of students' in the control class

Before using t-test formula the researcher would determine the average variant (S^2)

The variant (S^2) is calculated by formula:

$$S^2 = \frac{(N_1-1)S_1^2+(N_2-1)S_2^2}{N_2(N_2-1)}$$

Notes:

N_1 = Number of students' in experimental class

N_2 = Number of students' in control class

S_1^2 = Variant of experimental class

S_2^2 = Variant of control class

S^2 = Variant

The criteria are:

H_0 : H_0 is accepted if t-ratio < t-table (The hypothesis proposed are homogeneus)

H_a :$H_a$is accepted if t-ratio > t-table (The hypothesis proposed are not homogeneus)

Based on explanation above, the researcher concludes that hypothesis is an assumption about population parameter. This assumption may be true or not, the sample data are not consistent with thw statistical hypothesis, so the hypothesis is rejected. Because the test is used to know whether the hypothesis tahat is proposed can be accepted or rejected. The formula is used in this test is t-test.